

NOTES ON THE LIFE OF DR. CLARA SOUTHMAYD LUDLOW, PH.D.,
MEDICAL ENTOMOLOGIST (1852–1924)

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Abstract.—Dr. Clara Southmayd Ludlow, the first woman known to have published extensively on the taxonomy of mosquitoes and their occurrence in relation to the incidence of mosquito-borne diseases, forged a notable career in medical entomology in association with the United States Army. Though much is known about her accomplishments, knowledge of her professional and personal life has been less well documented. New information about her life and three previously unpublished photographs of her are presented in this article.

Key Words: Clara Southmayd Ludlow, entomologist, mosquito taxonomy, military, medical entomology

Dr. Clara Southmayd Ludlow is a significant figure in the history of entomology, in professional and personal terms, as the first woman known to have published extensively on the taxonomy of mosquitoes and their occurrence in relation to the incidence of mosquito-borne diseases (Knight and Pugh 1974, Neilson 1987). Not only did she forge a career in medical entomology during a time when women were rare among the ranks of entomologists, she did so in association with the military, where the presence of women was even rarer.

Dr. Ludlow's life and career have been addressed by Kitzmiller (1982), with excellent supplementation by R. A. Ward (Kitzmiller and Ward 1987) and Patterson (2003), works that are recommended for details necessary to fully understand the significance of her career as an entomologist.

Though the record of her professional life can be illuminated through her papers, Kitzmiller and Ward (1987) note that "we know almost nothing of the first 45 years

of Clara Ludlow's existence." This work adds some detail to the knowledge of that period, and her later life. A brief summary of her life and career is necessary here to place in context the additional information discovered.

Dr. Ludlow was born on 26 December 1852 at Easton, Pennsylvania, the eldest child of Jacob Rapalje and Anna Mary (Hunt) Ludlow (Cameron 1924–1925). Dr. Ludlow's ancestry was evidently of some pride to her, as she devoted a significant portion of her entry in the *Biographical Cyclopedia of American Women*—a source not cited by previous biographers—to genealogical detail (Cameron 1924–1925). Parental and sibling families were certainly important in her life, bringing professional associations that led to opportunities that might have been impossible to acquire otherwise.

On 8 June 1860, Dr. Ludlow was enumerated in the 1860 United States federal census in her parents' household in Easton,



Fig. 1. Clara S. Ludlow, ca. 1879–1889 (University Archives, The Gelman Library, The George Washington University, Kayser Photographic Collection, PA-131).

Pennsylvania, at the age of 7, the eldest of four children and only daughter (National Archives 1860 Federal Census). I have not been successful in locating her in the 1870 federal census, when she would have been age 17. It is probable that she accompanied her parents to Knoxville, Tennessee, immediately after the Civil War, and they are reported to have returned to Easton, Penn-

sylvania, by 1870 (Kitzmiller and Ward 1987); therefore, they may have been missed by the census officials because they were in transit.

In 1877, Dr. Ludlow enrolled in the New England Conservatory of Music, from which she graduated in 1879 (Kitzmiller and Ward 1987). Her whereabouts from this time until about 1897 have been only spec-

ulative. The census of 1880 enumerates her on 8 June 1880, residing at the Monticello Female Seminary near Alton, Illinois, a single woman, her occupation listed as "Music [Teacher]" (National Archives 1880 Federal Census). Most of the 1890 federal census was destroyed, and no record of her is found in the surviving fragments of that enumeration. Her entry in the *Biographical Cyclopedia of American Women* (Cameron 1924–1925) states that "for many years she made music her profession, teaching and doing a certain amount of concert work." Her professional records, deposited at the National Museum of Health and Medicine in Washington, D.C., begin with the year 1889, suggesting that at some point in the late 1880s, she began to turn to science as an avocation or perhaps vocation (National Museum of Health and Medicine 2004).

In 1897, she was a student at Mississippi Agricultural and Mechanical College (now Mississippi State University) in Starkville, Mississippi. On 20 June 1900, she was enumerated in the federal census residing on the campus of Mississippi A&M as a single woman, with no occupation listed (National Archives 1900 Federal Census). Enumerated nearby was Dr. George W. Herrick (or Herrich), professor of biology at the college, reportedly an influential figure in the development of her interest in mosquitoes (Kitzmiller and Ward 1987).

She graduated from Mississippi A&M in 1900 with the degree of Bachelor of Science in Agriculture (Kitzmiller and Ward 1987). In 1901, she was awarded the Master of Arts degree in Botany by Mississippi A&M, reportedly 31 years before a graduate program was formally offered by that institution (Kitzmiller and Ward 1987). Interestingly, one of her preserved works is a folder of drawings of *Viola* species (the violets) in the Edward L. Greene Papers of the University of Notre Dame Archives, perhaps obtained by Professor Greene when he worked in the Washington, D.C., area as a faculty member of the Botany Department of the Catholic University of America

(1885–1904) or in his capacity as an associate in botany at the Smithsonian Institution (1904–1909) (University of Notre Dame Archives 2004), either of which positions might have brought him into professional correspondence with Dr. Ludlow.

After graduation in 1901 with her Masters of Arts degree, Dr. Ludlow traveled to Manila, Philippines, to visit a brother who was stationed there as an artillery officer in the United States Army (Kitzmiller and Ward 1987). Approximately one year later, she returned to the States with her brother, who had contracted an illness, but during her stay in Manila, she began an association with military medicine that would endure for the rest of her life (Kitzmiller and Ward 1987, National Museum of Health and Medicine 2004).

In 1904, she was Lecturer on mosquitoes and disease at the Army Medical Museum in Washington, D.C. By 1907, she was Demonstrator of Histology and Embryology at George Washington University in Washington, D.C. (Calvert 1924), where she received her Doctor of Philosophy degree in 1908. Her doctoral dissertation was entitled "The Mosquitoes of the Philippine Islands: The Distribution of Certain Species and Their Occurrence in Relation to the Incidence of Certain Diseases" (Calvert 1924). She remained on the faculty of George Washington University, where in 1909 she was Instructor of Histology and Embryology (Calvert 1924). She surpassed yet another milestone in 1908 when she was elected to active membership in the American Society of Tropical Medicine, the first woman and the first non-physician scientist member of the society (Burke 2003).

In April of 1910, she was enumerated by the 1910 federal census in the District of Columbia, Washington, residing at 133 15th Street, age 58, unmarried, her occupation listed as "Scientist, Prev[entive] Medicine" (National Archives 1910 Federal Census). From 1916 through 1920 she served as Anatomist at the Army Medical Museum (Calvert 1924), now the National Museum



Fig. 2. Clara S. Ludlow at work in her room, ca. 1905–1911 (University Archives, The Gelman Library, The George Washington University, Kayser Photographic Collection, PA-132).

of Health and Medicine, on the campus of Walter Reed Army Medical Center in Washington, D.C. Her records at the museum, consisting of correspondence, notes, reports, logbooks, and other research materials, state that her research centered on identifying mosquitoes, including a project working with specimens sent in from military posts that resulted in the production of a Museum film, “Mosquito Eradication,” in 1918 (National Museum of Health and Medicine 2004).

In January 1920, Dr. Ludlow was enumerated in the 1920 federal census residing in the District of Columbia, at 1415/1435 15th Street, age 68, unmarried, and her occupation is listed as “Anatomist, Govt. Service” (National Archives 1920 Federal Census). During 1920, she became the museum’s Chief Entomologist, a position she

held until her death (Calvert 1924, National Museum of Health and Medicine 2004).

Dr. Ludlow passed away on 28 September 1924 in Washington, D.C. (Calvert 1924) and is interred in the Arlington National Cemetery, in Section 2, Grave No. 3843, beside her father, who was Surgeon of the 1st Regiment, Pennsylvania Volunteers, United States Army, in the American Civil War. Her grave is located under a large oak below the Old Amphitheater adjacent to Arlington House. Her stone states only her name and date of death, and “daughter of Jacob”—hardly an adequate memorial for this great lady.

Dr. Ludlow is included in a bibliography of biographies of entomologists published in 1945 (Carpenter 1945), but the cited obituary, published in the *Journal of the Washington Academy of Sciences*, states



Fig. 3. Clara S. Ludlow, Alumna and Faculty, ca. 1905–1911 (University Archives, The Gelman Library, The George Washington University, Kayser Photographic Collection, PA-130).

only that “[h]er work was mainly in connection with the disease prevention activities of the army” (Anonymous 1924) and does not mention her pioneering role as an entomologist. The failure of her peers to fully memorialize her remarkable achievements may be in some part due to her reportedly irascible personality (Kitzmiller and Ward 1987); as well, it may reflect the sexism of early twentieth century America.

Until now, only one likeness of Dr. Ludlow was known to exist, the one published in the issue of *Mosquito Systematics* dedicated to her in 1987 (Neilson 1987). In my research into the life of Dr. Ludlow, I discovered three previously unknown photographs of her in the George Washington University Archives, Kayser Photographic Collection, in Washington, D.C. These three photographs, which provide significant visual insight into her life, are repro-

duced herein, as Figs. 1–3, with the permission of the Gelman Library, Special Collections Department/University Archives, Washington, D.C.

ACKNOWLEDGMENT

The author acknowledges with thanks the encouragement and technical support of Richard G. Robbins, Defense Pest Management Information Analysis Center, Armed Forces Pest Management Board, Washington, D.C.

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